

What is claimed is:

1. An over-current protection device, comprising:

a current-sensing element exhibiting positive temperature coefficient behavior, the current-sensing element including an upper electrode foil, a
5 bottom electrode foil and a conductive material;

an upper metallic conductive sheet connected to the upper electrode foil and having at least one notch on its surface; and

a bottom metallic conductive sheet connected to the bottom electrode foil;

10 whereby the notch generates a cracking face in the current-sensing element during the burning of the over-current protection device, and the occurrence of a short circuit can be avoided.

2. The over-current protection device according to Claim 1, wherein the bottom metallic conductive sheet has at least one notch on its surface.

15 3. The over-current protection device according to Claim 1, wherein the notch is formed by a cutter or an etching process.

4. The over-current protection device according to Claim 1, wherein the area of the notch is preferably over 1% of the area of the upper metallic conductive sheet.

20 5. An over-current protection device, comprising:

a current-sensing element exhibiting positive temperature coefficient behavior, the current-sensing element including an upper electrode foil, a bottom electrode foil and a conductive material;

an upper metallic conductive sheet, including:

25 (a) a second upper metallic conductive sheet connected to the

upper electrode foil;

(b) a first upper metallic conductive sheet connected to the second upper metallic conductive sheet and having a different thermal expansion coefficient from the second upper metallic conductive sheet;
5 and

a bottom metallic conductive sheet connected to the bottom electrode foil; and

whereby the different thermal expansion coefficients generate a cracking face in the current-sensing element during the burning of the over-current protection device, and the occurrence of a short circuit can be
10 avoided.

6. The over-current protection device according to Claim 5, wherein the bottom metallic conductive sheet comprises:

a second bottom metallic conductive sheet connected to the bottom
15 electrode foil; and

a first bottom metallic conductive sheet connected to the second bottom metallic conductive sheet and having a different thermal expansion coefficient from the second bottom metallic conductive sheet.

7. The over-current protection device according to Claim 6, wherein
20 the first upper metallic conductive sheet and the first bottom metallic conductive sheet are made of a material selected from the group consisting of chromium, nickel, iron, cobalt, tungsten, titanium and the alloy thereof.

8. The over-current protection device according to Claim 6, wherein
25 the second upper metallic conductive sheet and the second bottom metallic conductive sheet are made of a material selected from the group consisting of copper, aluminum, stannum, lead, silver, platinum, gold and the alloy thereof.

9. The over-current protection device according to Claim 5, wherein at least one of the metallic conductive sheets comprises a notch on the surface.

10. The over-current protection device according to Claim 5, which is
5 applied to a battery protection of a portable electronic device.